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Challenges In Implementing Sustainability-Related Risk Management Practices On Public-Private Partnership Road Projects In Zambia

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Abstract
Background: *The demand for sustainability-related risk management in the road construction industry especially those financed via the Public Private Partnerships is increasing and Zambia is no exception. This is mostly because sustainability risks exist everywhere in the business environment. While the majority of studies have focused on operational risk management practices, the current study centers on assessing the challenges concessionaires and other implementers face as regards Environmental and Social sustainability-related risk management practices associated with road projects being executed through the PPP financing model using the Lusaka Ndola dual carriage way as the case study.*
Materials and Methods: *The researcher adopted a case study research design and utilized both quantitative and qualitative approaches, comprising of a detailed literature review and a structured questionnaire. Data was obtained from 40 professionals purposively selected from various institutions in the road construction industry. The Statistical Package for Social Sciences (SPSS) and Microsoft excel were used to analyse the data collected.*
Results: *Out of eight challenges confirmed, the study revealed three major implementation challenges as being significant and requiring attention, namely: (i) E&S issues not adequately planned and budgeted for by the concessionaire (34.4%); (ii) Inadequate sensitization of local stakeholders on E&S issues (31.3%); (iii) weak regulatory, monitoring and reporting oversight/mechanisms (15.6%).*
Conclusion: *The findings confirmed the assertion that "sustainability related risks such as those from the environmental and social dimensions are not adequately incorporated in road projects executed through the PPP model in Zambia owing to the key challenges faced by implementers and concessionaires".*
Keywords: *Public-private partnerships, Sustainability, Road Construction, Implementation challenges, Zambia*
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I. Introduction

Public Private Partnerships (PPPs) are usually an adequate mechanism for countries with inadequate funds and restricted budgets in developing and developed countries respectively. The objective is to reduce the gap between the growing demand for road infrastructure and budgetary constraints and the ineffectiveness and inefficiency of traditional public procurement to address this road infrastructure deficit [1]. Zambia is no exception to the adoption of PPPs in the recent years, especially in road infrastructure development. Much as PPPs in Road construction have attracted increasing attention as an alternative procurement model to the traditional one, sustainability of these investments is key. Sustainability can also be distinguished as a concept with a primary focus on Sustainable Development (SD) which has a close relationship with development of infrastructure projects.

It is evident that road infrastructure is one of the critical pillars in the transition into the desired sustainable society, the planning and management of road construction projects of all types are crucial to achieving success in this sector. Because of their size, the objects, and the different processes such as initiating, planning, and executing, as well as the stakeholders and the changing environment, road project activities are extremely unsafe. Therefore, [2] suggests that risk management approaches during road construction should consider sustainability aspects. This is to say Environmental and Social (E&S) sustainability risk should be managed with the same vigor other risks such as financial and operational risk among other types of risks. Policies and strategies regarding sustainability risk appetite are required. This in itself is not an easy task, as cultivating a sustainability risk appetite for PPP road projects can be challenging as concessionaires are mostly profit-generation centered to enter a PPP arrangement. Hence, there are criticisms against PPPs for focusing on economic goals and financial targets while giving less emphasis to attainment of social and environmental objectives [3]. Most firms would prefer not deal with any sustainability related risk especially the social and environmental risks, and yet these risks are inherent in project day to day activities and therefore cannot be avoided. As a result, road infrastructure projects executed through PPP are likely to fail to adequately promote sustainable development goals.

Moreover, like other developing countries Zambia is struggling to manage such risks. In Zambia, a few if any studies have been conducted to establish challenges encountered in trying to implement E&S sustainability related risk management practices on PPP financed of road projects. This study aimed at establishing the challenges faced by implementers in the implementation of Environmental and Social sustainability-related risk management practices employed on road projects executed through PPPs based on a case study of the Lusaka-Ndola dual carriage way. The study preposition was "inadequate incorporation of E&S sustainability risk management practices in PPP financed road projects in Zambia can be attributed to the challenges faced".

II. Material And Methods

Research Design

To meet the research objectives a case study research design was adopted, as data was mainly collected from the people working on road projects in Zambia. The study employed mixed method analyses which utilized both quantitative and qualitative data to address the research questions and obtain different perspectives on the data that was collected.

Population and Sampling design

The study employed purposive random sampling which is a combination of non-probability and probability sampling techniques to get insights of the study. [4] highlight that using random sampling yields more breadth, whereas non-random sampling yields more depth, hence a combination of both techniques was advantageous to this study. Further, purposeful sampling in a case study allows the researcher to explore information-rich cases from which one can learn a great deal about issues of central importance to the research. The sample of the study comprised Government employees working on PPPs, the concessionaire working on the Lusaka Ndola dual carriage way and professionals working on environmental and social risk management in the road construction industry. These participants were selected based on certain characteristics needed to answer the research questions. From this pool of people, 40 participants were purposively selected.

Data collection Methods

Primary data were collected by administering open and closed ended questionnaire to the respondents, while interviews were conducted where possible. A structured questionnaire was used for data collection which was administered physically to 40 professionals in the construction industry using convenience sampling approach. By use of a questionnaire, the respondents were asked to indicate whether they are aware of any challenges that the concessionaire or other key players were facing in the implementation of E&S sustainability risk practices.

Data Analysis Methods

Data analysis is the process of analyzing, cleaning, transforming and modelling data collected in a research study. Data was arranged, categorized, coded and then tabularized for easy scrutiny. The raw data that was collected for this study was evaluated by means of the Statistical Package for Social Sciences (SPSS) version 26 and Microsoft excel (Pareto's Principle) were used for data analysis. The SPPS tool was used to generate tables and charts as relevant. Further, the software was also used to work out descriptive statistics for the data on quantitative variables in the study.

Ethical Issues

In a bid to uphold research study ethical considerations, the respondents were given a detailed briefing and the purpose of the study was explained to each one of the before the commencement of the study. The participants were given the liberty to willingly decide to participate in the study through informed consent. To guarantee anonymity and secrecy all information given by the respondents were held and treated with utmost confidentiality by not disclosing the names and identity of the research participants.

III. Results

From the results obtained, 80 percent of the respondents responded in affirmative while 20 percent indicated that they are not aware of any challenges being faced. The 80 percent who answered in affirmative were further asked to indicate as appropriate factors that impeded implementation of E&S sustainability related risk management practices on PPPs financed road projects in Zambia. The study confirmed the prevalence of implementation challenges faced by concessionaires and other key players.

Table no. 1: Challenges in E&S implementing sustainability practices on PPPs road projects

Description of Challenges	Responses		Cumulative Percent
	Frequency	Percent	

E&S not adequately planned and budgeted for by concessionaire	11	34.4	34.4
Lack of commitment from local employees	1	3.1	37.5
Lack of coordination among stakeholders	1	3.1	40.6
Inadequate sensitization of local stakeholders on E&S issues	10	31.3	71.9
Delayed approvals from Government authorities	2	6.3	78.2
Lack of coordination between the contractors and service providers	1	3.1	81.3
Weak regulatory, monitoring and reporting oversight/mechanisms	5	15.6	96.9
Contract/Agreement between concessionaire and CA not known to the public	1	3.1	100
Total	32	100	

The study found eight (8) challenges as regards the implementation of the E&S sustainability related risk management practices. Considering that it would be overwhelming to respond to 8 challenges at the same time, the study used the Pareto Principle to narrow to three (3) significant challenges to concentrate on. Pareto principle states that 20% of the population controls 80% of the wealth. Similarly, the study sought to identify a few challenges whose contribution to low implementation of E&S sustainability risk management practices on PPP road projects was 80 percent. The three (3) significant challenges in order of importance were:

i. E&S not adequately planned and budgeted for by the concessionaire
ii. Inadequate sensitization of local stakeholders on E&S issues
iii. Weak regulatory, monitoring and reporting oversight/mechanisms

E&S not adequately planned and budgeted for by the concessionaire

Eleven (11) out of thirty-two (32) respondents representing 34.4 percent of those who answered in affirmative to the existence of challenges indicated that E&S sustainability risk management is not adequately planned and budgeted for by the concenssionnaire from project inception. Respondents expressed a concern by the fact that most PPPs emphasis on the need for the concessionaires to get their return on investment, thereby focusing more on the economic viability of the road projects while neglecting the need and attention to environmental and social viability of the projects. This in itself results in inadequate planning and budget allocation to E&S issues on PPP road projects. Others among this population also alluded to the fact that the PPP model is relatively at its infancy leaving room for improvement as regards E&S sustainability.

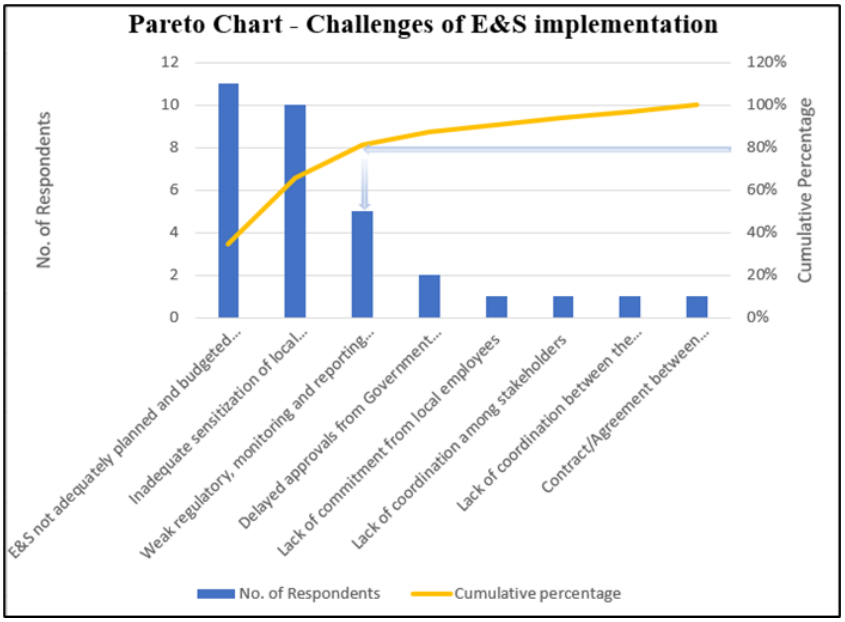

Figure no. 1: Plot of the results on Pareto diagram

Inadequate sensitization of local stakeholders on E&S issues

Ten (10) out of thirty-two respondents representing 31.3 percent of those who answered in affirmative to the existence of challenges indicated that there is inadequate sensitization of local stakeholders on E&S risks and impacts.

Weak regulatory, monitoring and reporting oversight/mechanisms

Five (5) out of thirty-two respondents representing 15.6 percent of those who answered in affirmative to the existence of challenges indicated that there is weak regulatory, monitoring and reporting oversight/mechanism.

IV. Discussion

The study confirmed the prevalence of E&S implementation challenges which could be linked to inadequate E&S sustainability appraisal tools and indicators for assessment of GRZ financed road projects in Zambia. This is despite the GRZ's buy-in on sustainable PPP projects as far back as 2009. This result also correlated with [5] findings who conducted a study on "Drivers and barriers to sustainability practices in the Zambia Construction Industry" unlike the current study which focused on the sustainability related risk management on PPP road projects in Zambia. Furthermore, the current study revealed that although the political leadership in Zambia had made pronouncements and expressed desire and optimism to use the PPP arrangement to deliver public infrastructure and services, the country required sustainability champions to drive the E&S sustainability agenda on road projects financed through the PPP model.

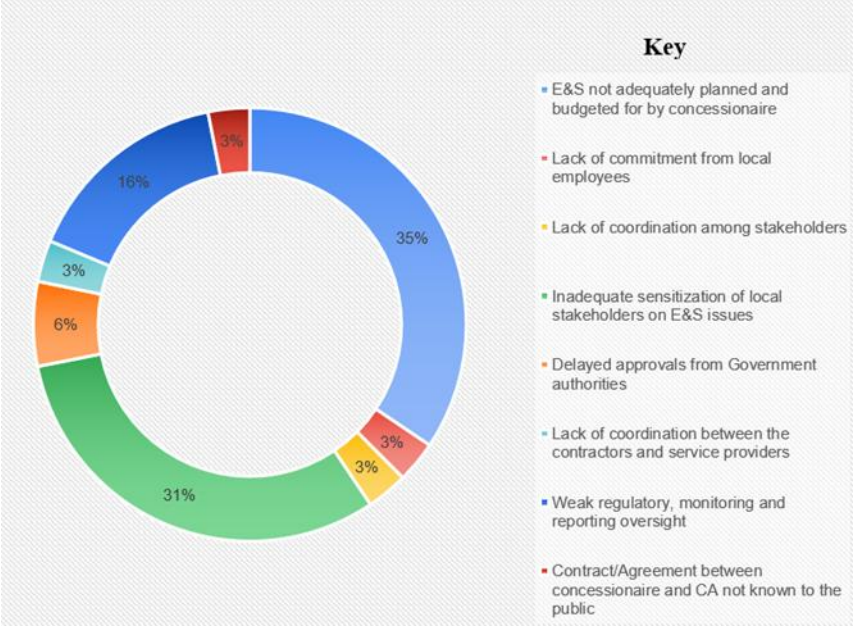

Figure no. 2: Challenges of implementing E&S sustainability practices in the road sector

The main challenges in the implementation of E&S sustainability practices identified by the current study were: (i) E&S issues not adequately planned and budgeted for by the concessionaire; (ii) Inadequate sensitization of local stakeholders on E&S issues; (iii) weak regulatory, monitoring and reporting oversight/mechanisms. Similar results were reported by [5] even though their study focused on drivers and barriers within the wider context of the construction industry unlike the current study which focused on PPPs in the road sector. Zulu et al (2023) study revealed the barriers to sustainable construction being clustered as (i) Environment and health related factors (ii) Regulatory and industry related factors (iii) Awareness and Knowledge related factors. The similarity in the results was attributed to the same geographical boundary, minor changes in economic and social environment and the same infrastructure/construction policy documents reviewed.

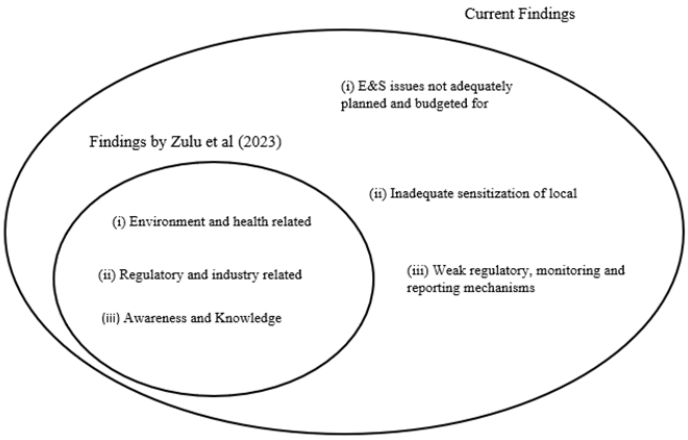

Figure no. 3: Current findings versus Zulu et al (2023)

The major difference between the current study and [5] was that this study revealed challenges regarding the implementation of E&S sustainability on PPP financed road project as opposed to barriers to sustainable construction in the infrastructure industry as a whole. This study therefore has contributed to the body of knowledge and in particular the challenges in the implementation of E&S sustainability related risk management practices of road projects financed via PPPs.

V. Major Challenges

E&S issues not adequately planned and budgeted for by the concessionaire

Eleven (11) of the 32 respondents representing 34.4 % indicated that inadequate planning and budget allocation for E&S Risk Management was a major challenge to the implementation of E&S practices by the concessionaire on PPP road projects particularly the Lusaka Ndola dual carriage way. There was a concern by the respondents that E&S is not given the required attention at project planning phase apart from carrying out environmental and social impact studies as required by the national law to facilitate environmental clearances as a condition precedent in the concession agreement.

In Zambia, the PPP model is relatively new especially in the road sector with the first regulatory framework put in place in 2009. So far there has only been one successfully completed PPP financed road project (Chingola-Kasumbalesa road project on the Copperbelt of Zambia) which forms a basis for other PPP road project implementers to learn from regarding implementation E&S dimensions of sustainability.

At global level, [6] asserts that extant literature has very well noted that the focus of the private sector on sustainability agenda is missing, and therefore fail to positively embrace the agenda of sustainable development. Very often private sectors activities related to the goal of sustainable development are very poor [7]. The similarity in the results with the international experience with regards failure by the private sector to adequately plan and budget for E&S sustainability risk management signifies the importance of the findings.

However, it is worth noting that inadequate planning and budget allocation was not a permanent stumbling block for the implementation of E&S sustainability practices to PPPs financed road projects in Zambia. Based on this research, it was found that possible remedies would be: (i) ensuring that adequate E&S provisions are incorporated in the RFP and concession agreement and (iii) introducing Sadler's Triple Bottom Line approach at the early stages of the procurement process as a bid evaluation measure as a way of stimulating the adoption of E&S sustainability management by the private sector.

Inadequate sensitization of local stakeholders on E&S issues

Ten (10) out of thirty-two respondents representing 31.3 percent of those who answered in affirmative to the existence of challenges indicated that there is inadequate sensitization of local stakeholders on E&S risks and impacts. Respondents in this group indicated that most stakeholders were not very knowledgeable of the project and its implication especially in the communities along the road corridor. These results expose the importance of stakeholder involvement and management from the planning of the project through to project closeout. These results are similar to [8] where stakeholder involvement and management was found to be one of the key indicators to sustainability for road infrastructure projects in Tanzania. Their study further revealed that this indicator relates to increasing an organization's capacity to improve personnel competencies in order to improve project performance. According to [9], effective stakeholder management techniques are essential to ensure stakeholders' acceptability and to address any potential issues, therefore early involvement of all project stakeholders in decision making as well as information sharing is crucial. Going by the findings of this study, it is essential to conduct trainings for third parties, in particular the community as a crucial element for raising the awareness of projects, the effects of construction activities, and infrastructure in the community. Based on the findings from this research, possible remedies would be effective stakeholder engagement and management with a stakeholder engagement plan prepared early enough at project inception.

Weak regulatory, monitoring and reporting oversight/mechanisms

Five (5) out of thirty-two respondents representing 15.6 percent of those who answered in affirmative to the existence of challenges indicated that there is weak regulatory, monitoring and reporting oversight/mechanism. Respondents in this group were of the opinion that much as the country (Zambia) may have adequate regulations in place, there are compliance issues when it comes to stipulated E&S practices. The respondents also felt that the monitoring and reporting mechanisms by the Government entities were inadequate. This may not be permanent going by the remedy which the findings of this study which suggest that public agencies can conduct regular and effective monitoring of E&S aspects. Further, Zambia's regulatory framework can be enhanced by integrating with and adapting to the E&S elements and practices of Multilateral Financing Agencies and Good International Industry Best Practice (GIIBP).

VI. Conclusion

The study confirmed the prevalence of E&S implementation challenges of which the major ones include: (i) E&S issues not adequately planned and budgeted for by the concessionaire; (ii) Inadequate sensitization of local stakeholders on E&S issues; (iii) weak regulatory, monitoring and reporting oversight/mechanisms. The findings confirmed the assertion that "sustainability related risks such as those from the environmental and social dimensions are not adequately incorporated in road projects executed through the PPP model in due to the key challenges faced by implementers and concessionaires.". It is evident that there is inadequate focus on the holistic E&S sustainability principles in the bid selection process, instead the selection of concessionaires is mainly based on financial and technical aspects. Therefore, one of the practical approaches for integrating E&S sustainability concepts in PPP road projects is to include E&S sustainability risk management aspects in the procurement process as this will compel the private sector to devise project proposals that are sustainable. Based on the results derived and the conclusions made, the following recommendations are suggested for consideration:

- The PPP Office and implementing agencies should ensure that deliberate awareness programs on E&S sustainability risk management are put in place and form part of the institutional Risk Management Strategy.
- Government should come up with mandatory E&S sustainability reporting in the prequalification stage in the future projects to facilitate a level playing ground for the private sector/bidders. However, this should be done with enhanced exposure to the sustainability agenda to achieve more systematic behavioral change in future pronouncements.

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